Appendix A:

Priority Industry Sectors

A sector-based approach allows EPA to think broadly about the nature of the compliance problems facing a particular industry, and to address those problems with the appropriate tool or mix of tools.

Automotive Service and Repair Sector

Sector Profile

The automotive service and repair sector comprises the largest number of conditionally exempt and small quantity generators of any industrial/commercial sector. The types of pollutants, as well as the widespread location and sheer numbers of these shops, led EPA to designate this sector as a priority in FY96.

Pollutant Profile

Pollutants generated include petroleum and ethyl-based liquids, halogenated and non-halogenated solvents, and chlorofluorocarbons (CFCs). Potential impacts to the environment and human health occur when these materials are mishandled, either during the repair process or in final disposal. Improper repair results in CFCs being emitted into the atmosphere, reducing the ozone layer that protects the earth from harmful ultraviolet radiation. Improper handling and disposal of petroleum, solvents, and ethyl liquids can contaminate water supplies and release VOCs into the atmosphere, contributing to ground level ozone.

Key Activities and Accomplishments

Compliance Assistance: In FY99, EPA reached 17,662 shop owners and managers using a variety of vehicles such as meetings and training, fact sheets, and on-site visits. In particular, several of the regional offices worked with various state, industry and educational institutions to contact automotive shop owners and managers, often targeting specific groups. For example, Region 1 focused on the automotive collision and body shop sector and worked with owners and managers to reduce volatile organic emissions. Region 2 worked with the Greater New York New Car Dealers Association to assist its members in understanding environmental regulations as they pertain to their shops. Region 4, the State of Georgia, and Georgia Tech completed outreach activities to rural automotive repair shops (see specifics on page 15).

Inspections and Enforcement: Over the past three years, regions and states have focused inspection and enforcement efforts on chlorofluorocarbon (CFC) and reformulated gas emissions, hazardous waste, underground storage tanks, and underground injection control Class V wells. In FY99, 1,749 inspections were conducted and 283 final orders were entered for a total assessed federal penalty of $883,431.

Strategic Approach: EPA estimates that approximately 500,000 shops service or repair automobiles and light trucks. While the industry is not subject to difficult technical requirements, the challenge has been getting shop owners to understand their responsibilities. Therefore, we work to provide compliance information to the shop owners through various communications channels so they can understand the basic requirements. Once this is achieved, shop owners are then provided with additional information identifying several compliance assistance providers within their state who can assist them with learning about how their state environmental programs operate.

Pollutant Profile

The majority of releases from coal-fired power plants are air emissions. In comparison to 496 other industry categories included in EPA's air database, this sector ranks first or second in emissions of nitrous oxide (NO_x), sulfur dioxide (SO_2), and particulate matter (PM). Since 1997, EPA was able to reduce 250 tons of NO_x, 1,400 tons of SO_2, 500 tons of PM, 20,000 lbs of copper, and more than 500 gallons of PCB pollution in the coal-fired power plant sector through settlements.

Coal-Fired Power Plants

Sector Profile

This sector, which consists of approximately 466 facilities, generates the most electricity in the utility industry, accounting for more than 75 percent of the net generation for fossil fuel energy sources.

Compliance Status: Since 1997, approximately 70% of coal-fired power plants have been inspected annually for compliance with either air, water, or hazardous waste laws. A total of 423 inspections were conducted in FY99. The number of facilities regulated under the Clean Air Act (CAA) in significant noncompliance (SNC) declined from 59 to 38 in the past year, while those under Clean Water Act (CWA) rose from 31 to 37. New facilities identified during FY99 as being in SNC included 15 (for CAA) and 46 (for CWA).

EPA made 17 civil referrals of coal-fired power plants in FY99, an increase of 13 from the previous year. Most referrals were violations of Prevention of Significant Deterioration (PSD), New Source Performance Standards (NSPS), State Implementation Plans (SIPs), and other CAA regulations. All 17 sources in the referrals are located in Regions 3, 4, and 5. EPA initiated 13 administrative penalty order (APO) complaints and collected approximately $250 thousand in penalties for FY99. Settlements with coal-fired power plants in general generated $1.7 million in penalties during FY99. Since 1997, 73 civil actions (19 for FY99) have been settled in the sector, totaling more than $2.1 million in civil judicial and administrative penalties. Activities to return facilities to compliance were valued at $224.5 million with another $4.7 million invested in supplemental environmental projects (SEPs).

Key Activities and Accomplishments

Inspections and Enforcement: For the past two years, EPA Headquarters and Regions 3, 4, and 5 have been investigating the expansions in the power industry with the goal of having pollution controls (SO_x and NO_x) on the plants with the greatest amounts of pollution. We evaluated the compliance status of these power plants. As a result of the PSD/New Source Review (NSR) compliance initiative, EPA and DOJ recently filed lawsuits against seven of the nation's largest utility companies. In addition, EPA filed an administrative order against the Tennessee Valley Authority. The ongoing investigations of these facilities and other utility companies will continue into FY2000/2001.

Region 8 initiated comprehensive evaluations of CAA compliance at the 38 coal-fired power plants in the region. These evaluations include analysis of the most recent state inspection report and review of two years of quarterly excess emission summary data for each facility. The region will identify discrepancies between the utilities and states as to how they report excess emissions and monitoring downtime and follow-up with the appropriate enforcement responses.

Concentrated Animal Feeding Operations (CAFOs)

Sector Profile

Within the agricultural sector, animal feeding operations (AFOs) represent a large potential source of polluted runoff. AFOs are livestock-raising operations where animals, such as beef cattle, hogs, chickens, and turkeys, are kept and raised in confined places, resulting in a high concentration of pollutants on a small land area. AFOs are a priority under the President's *Clean Water Action Plan (February 1998)* and the *Unified National Strategy for Animal Feeding Operations (March 1999)* issued by USDA and EPA.

Pollutant Profile

AFOs/CAFOs can pose a number of risks to water quality and public health, mainly due to the amount of animal manure and wastewater generated and how this waste is subsequently managed. Manure and wastewater can contribute nutrients (e.g., nitrogen, phosphorus), sediment, pathogens, heavy metals, hormones, antibiotics, and ammonia to the environment. Excess nutrients can cause eutrophication in surface waters and can contaminate drinking water (from nitrates and pathogens). Environmental risks are posed by spills while handling manure, a breach of the storage system, or runoff from improperly applied/managed land application.

Of the 450,000 AFOs nationwide, approximately 12,500 of them are considered to be concentrated animal feeding operations (CAFOs) due to the large number of animals present at the facility (over 1,000 animal units) or the method of discharge from the facility. AFOs/CAFOs are distributed across the United States, with a heavier concentration in the mid-plains, eastern seaboard, and western coastal regions. In recent years, as the livestock industry has consolidated into fewer and larger operations (particularly for poultry and hogs and increasingly in the dairy industry), the effects of polluted runoff from AFOs/CAFOs on water quality have assumed increasing importance.

Compliance Status: CAFOs are "point sources" under the CWA, subject to the National Pollutant Discharge Elimination System (NPDES) permit requirements if they cause pollutants to be discharged to waters. Currently, the CAFO sector has many facilities operating outside the federal NPDES regulatory system. Though NPDES permitting of CAFOs is anticipated to increase with subsequent entry of permit information into the permit compliance system (PCS), few states or EPA regions today maintain an accurate inventory of CAFO facilities.

California Dairy Quality Assurance Program (CDQAP)

The CDQAP, a partnership among 30 entities including California's dairy industry; state, federal, regional agencies; and universities, is the first voluntary compliance program for dairies in California. In 1999, the Partnership began a dairy environmental stewardship certification program, requiring attendance of a 3-session course and passing an onsite evaluation. For these evaluations, the Partnership developed a compliance checklist covering federal/state water regulations, best management practices, and groundwater and nutrient application issues. Increased awareness of Region 9's ongoing dairy inspections and enforcement increased attendance at the CDQAP classes by twenty-fold.

Key Activities and Accomplishments

Compliance Assistance: The National Agriculture Compliance Assistance Center (Ag Center) developed and implemented an Interagency Agreement with the U.S. Department of Agriculture (USDA). The livestock portion of this Agreement focuses on environmental issues specific to livestock management, pursuant to which EPA is developing a national curriculum for livestock operators. In FY99, the Ag Center distributed more than 25,000 documents, many of which supported AFO listening sessions held across the country; expanded its Web site to include an "Animal" page and nutrient management information; and developed six species-specific fact sheets explaining permit requirements. Through a grant from EPA and Region 4, the Conference of Southern Counties Associations developed a compliance assistance document, *Animal Feeding Operations, the Role of Counties,* which was widely distributed.

Inspections and Enforcement: In 1999, we held seven CAFO Inspector Training Classes in several regions for approximately 180 regional and state inspectors. EPA regions conducted 339 compliance inspections. Additionally, under an EPA grant, the National Association of Attorney Generals (NAAG) held a CAFO workshop in Kansas City, which was attended by 30 states, NAAG staff, several EPA regions, and USDA.

Significant Cases: Ponderosa is a dairy CAFO in Nevada with 5,000 cows. In February 1998, a manager at the dairy opened a lagoon valve releasing manure wastewater to a saturated irrigation field. The valve, remaining open for two days, released approximately 1.7 million gallons across eight miles of federal lands and open roads in Nevada. The manure also crossed into California and the Amargosa River. EPA criminal investigators were given false information about how the spill occurred and who was responsible. Rockview Farms Inc., Ponderosa's owner, pled guilty to one felony violation for making false statements to federal investigators, and one misdemeanor CWA violation for discharging manure wastes without a permit. Rockview paid criminal penalties of $250,000; reimbursed the state $6,900 for its response and investigation costs; and donated $10,000 worth of investigative equipment. The Ponderosa manager pled guilty to one CWA count of negligently discharging CAFO wastes, paid a $5,000 fine, and was placed on a

three-year probation.

Strategic Approach: Under the *Unified National Strategy for Animal Feeding Operations*, USDA and EPA's goal is to minimize water pollution from confinement facilities and land application of manure through the development of Comprehensive Nutrient Management Plans (CNMPs). The national performance expectation is that all AFOs voluntarily should develop and implement CNMPs.

EPA's sector strategy, the *CAFO Compliance Implementation Plan (March 1998)*, calls for: (1) inspections of all CAFOs in priority water watersheds by 2001 and all others by 2003; (2) state or EPA regional development and implementation of state compliance/enforcement strategies; (3) development of a CAFO inventory; and (4) support of state and regional efforts to permit all CAFOs beginning in FY2000. These permits should include enforceable CNMPs.

Dry Cleaning

Sector Profile

Strategic Approach: This integrated approach is best illustrated through our work with the dry cleaning sector. Since first identified as a national priority by EPA in fiscal year 1995 (FY95), we have been successfully using a combination of approaches to improve the compliance of this sector. Activities have included educating the industry about regulatory requirements through compliance assistance, followed by inspections and enforcement actions, as needed.

EPA has focused on the dry cleaning sector (SIC 7215, 7216, 7218) because it presents various environmental threats and compliance concerns. For example, the cumulative environmental impact caused by potential releases of cleaning solvents to the ground, water, and air from facilities located in population centers can be significant. Dominated by "mom and pop" businesses and with a heavy concentration of owners/operators who do not speak English as their first language, these 25,000-35,000 facility owners may not fully understand and may not have the resources to obtain, read, and interpret the numerous environmental regulations that apply to them.

Dry cleaners, which are categorized as service industry establishments, are not required to report to the Toxic Release Inventory (TRI). Moreover, most were not traditionally tracked by EPA compliance and enforcement databases. Since this sector became a national priority, regions and states have made great strides in tracking dry cleaners in the EPA databases. The national EPA databases now reflect an increase from just over 980 cleaners in 1995 to over 11,000 cleaners in FY99.

Pollutant Profile

The most commonly used cleaning solvent in this sector is percholorethylene (perc). Approximately 85% of dry cleaners use perc, which dominates in commercial dry cleaning establishments, while petroleum solvents are used in the majority of industrial machines. Perc is a carcinogen that readily volatilizes in the air and can contaminate soil and water during the cleaning, purification, and waste disposal phases of dry cleaning, if improperly handled. Perc was found in 771 out of the 1,190 National Priorities List sites for the Superfund Program. The 1993 EPA air toxics standard for perc dry cleaners requires both existing and new facilities to use designated vapor control technologies and undertake leak detection and equipment repair to prevent fugitive emissions.

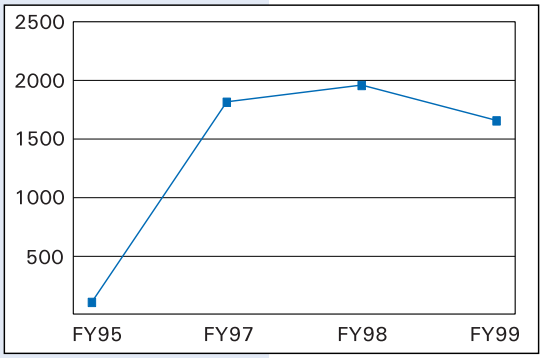
Key Activities and Accomplishments

Compliance Assistance: When EPA became aware of the environmental concerns of the dry cleaning industry, we worked closely with the industry, states and other stakeholders during the development of regulations and their implementation. This involved building partnerships with industry, developing mentoring programs, and creating compliance tools such as manuals, fact sheets, and videos to assist the industry and other regulators.

Several compliance tools have been developed to assist dry cleaners with implementing environmental requirements. Some tools are multimedia so that dry cleaners can get environmental regulatory information for air, hazardous waste, and water from one source. Information about tools developed by EPA for this sector is available on the Internet at http://es.epa.gov/oeca/ccsmd/cac/dryclean.html.

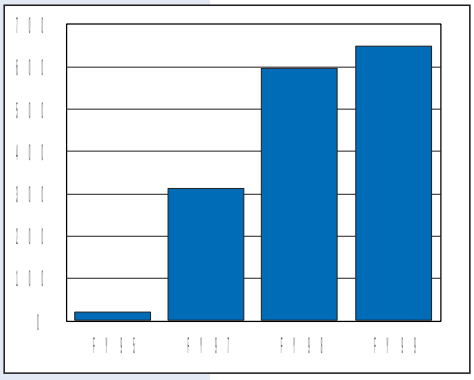
In addition to developing tools to assist cleaners and regulators with environmental requirements for cleaners, EPA offered training using a variety of techniques (e.g., satellite, videotapes, classrooms) and in different locations to accommodate the cleaners. Some compliance assistance providers also have supplied one-on-one training during their site visit to a cleaner. In FY99 alone, EPA regions responded to 50 hotline inquiries from dry cleaning establishments; held 12 workshops that reached over 500 entities; and conducted 299 on-site visits.

Exhibit A-1. Trends in Inspections Conducted at Dry Cleaners



Inspections and Enforcement: Following outreach and compliance assistance efforts, EPA increased its inspection and enforcement activities. As shown in exhibit A-1, the reported inspections of dry cleaners increased from 111 inspections in FY95 to just under 2,000 inspections in FY98. In FY99, more than 1,600 inspections were conducted.

Exhibit A-2. Summary of Inspected Dry Cleaners with 1 or More Violations



From FY95 to FY99, the distribution of inspections by media also changed. In FY95, inspections were primarily RCRA (78%), with few CAA (20%) and CWA (<1%) inspections. By FY99, CAA inspections increased from 20% to 72%, with smaller numbers of RCRA (27%) and CWA (over 1%) inspections. This increase in CAA inspections was due to the 1996 compliance date for the regulations setting national emission standards for hazardous air pollutants (NESHAP) for perc dry cleaning facilities.

From FY95 through FY99, the number of dry cleaners determined to have one or more violations has increased significantly (see exhibit A-2) as the number of inspections

conducted increased. In the cases where violations were found at dry cleaners and follow-up inspections were conducted, regions and states reported that the compliance rates typically improved. Generally, the regions reported high rates of compliance for the proper installation of control equipment (usually in the 80 to 90% range) and lower rates of compliance for recordkeeping and monitoring requirements.

From 1997 through 1999, 84 enforcement cases were filed. Most facilities (58%) had violations for recordkeeping, while 25% had violations for monitoring and sampling practices. While total penalty amounts were under $20,000 since most dry cleaners are small businesses with inability to pay issues (lower revenues, capital assets, etc.), the value of their activities taken to return to compliance was over $1.5 million dollars, with supplemental environmental projects totaling $40,992. One case in EPA's Mid-Atlantic Region, Region 3, against a dry cleaner resulted in a 15-ton reduction in perc. In another 1999 enforcement case, EPA issued a RCRA Section 7003 Imminent and Substantial Endangerment Order against a dry cleaner in Georgia for contaminating its facility and the city's water supply wells with perc and other pollutants. In addition to perc, other pollutants were trichloroethylene, 1,2-dichloroethylene, vinyl chloride and other breakdown products and/or additives such as ethene, methane, ethane, propane, propene, Freon 113, trimethylbenzene isomers, and the metals manganese and arsenic. This order, issued after a joint SDWA/RCRA investigation, requires the facility to characterize and clean up all contamination, while ensuring that the City has an adequate water supply from alternative wells.

Industrial Organics and Chemical Preparations

Sector Profile

In 1998, EPA identified the industrial organic (SIC Code 2869) and chemical preparation (SIC Code 2899) industries as national priorities because of the large number of facilities (3,387 across the nation); the high percentage (>60%) of small-sized facilities (<10 employees) needing compliance assistance; high levels of risk from Toxic Release Inventory (TRI) releases and chemical spills; and repeated incidents of noncompliance across statutes. While these facilities are located nationwide, most are located in Regions 2, 4, 5, 6, and 9, and are significantly represented in environmental justice communities.

Compliance Status: Both industries have varied and complex manufacturing processes subjecting them to most statutes. As shown in the publications *The Chemical Industry National Environmental Baseline Report 1990-1995* and the *EPA/CMA Root Cause Analysis Report: An Industry Perspective*, chemical facilities repeated similar types of violations across a number of statutes. Specific areas identified as persistent problems included failing to report under the Emergency Planning and Community Right-to-Know Act (EPCRA) and the CAA and exceeding permit limitations under the CWA.

Key Activities and Accomplishments

Compliance Assistance: The overall strategy for this sector emphasizes compliance assistance. In FY99, four workshops attended by representatives from 585 facilities were held; users of ChemAlliance (compliance assistance center) substantially increased; and over 7,000 copies of the EPCRA, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Resource Conservation and Recovery Act (RCRA) and treatment, storage, and disposal facility (TSDF) compliance audit protocols were distributed.

Inspections and Enforcement: Since 1997, the number of inspections has remained constant. There are about 3,887 facilities subject to the CAA, CWA, and RCRA in these sectors. Of these, about 25% of the inspections occur at industrial organic facilities and about 20% at chemical preparation facilities. Combining CAA, CWA and RCRA inspections, over 2,000 were conducted at industrial organic facilities and almost 1,000 inspections were conducted at chemical preparation facilities.

The number of new facilities identified as being in SNC since FY97 varies across the statutes. The CAA inspections yielded the most SNCs with 208 facilities, followed by the CWA at 147, and RCRA with 94. Since 1997, 124 cases have been settled (64 chemical preparation cases) with total penalties of $2,010,546, and another $1,134,370 assessed for activities required to return to compliance. In addition, SEPs were valued at $1,481,700. During the past three years, there have been 26 new cases initiated.

Significant Cases: Region 1 settled the third and final portion of a lengthy settlement with the major potentially responsible party (PRP) in the Parker Landfill Superfund Site case. This final round of agreements resulted in the PRP funding $7 million towards a $7.8 million total cleanup. The landfill, located in Lyndon, Vermont, occupies 25 acres containing a solid waste disposal area and three smaller industrial waste areas. Approved as a solid waste disposal area in 1971, it was used for the disposal of municipal solid waste and sometimes for industrial wastes. Industrial wastes disposed at the site included trichloroethane, sodium hydroxide, 1,1,1-trichloroethane, and acetone. Between 1972 and 1983, 1,333,300 gallons of liquid waste and 688,900 kilograms of liquid, semisolid, and solid industrial wastes were disposed of at the site.

Strategic Approach: Using a national approach and a mix of tools, we have reached thousands of these facilities. In 1998, EPA began these projects by encouraging disclosure of violations under the Audit Policy (see page 24), conducting inspections at facilities subject to new regulations, and developing several tools to assist facilities to understand and improve compliance. Below are highlights of these projects.

- **EPCRA 312 Project:** Under this national project EPA provided compliance assistance materials to 2,005 potentially regulated industrial organic facilities to encourage them to submit EPCRA 312 Tier II reporting forms to their Local Emergency Planning Committees (LEPCs) and State Emergency Response Commissions (SERCs). EPA also sought to increase the facilities' awareness of their regulatory obligations by providing compliance assistance material on the CAA 112(r) Risk Management Plan and information on how to obtain the *Process-based Self-assessment Tool for the Organic Chemical Industry* (EPA-305-B-97-002). This enormous outreach effort resulted in 1,573 facilities confirming receipt of the materials and 1,400 verifying their status as industrial organic manufacturing facilities.
- **CAA Hazardous Organic NESHAP (HON) Inspection Tool and Training:** EPA developed and delivered training in support of HON wastewater requirements. The training consisted of a day-long classroom session and a day-long field exercise. Approximately 200 state, local and regional personnel were trained at 12 satellite locations. The overall course rating was "excellent."
- **Universe Verification Project:** This purpose of this project was to try to identify the entire universe of industrial organic and chemical preparations manufacturers including those facilities with no EPA or state environmental record. This project allowed EPA and states to expand their presence in the regulated community and to improve national and local database information through a systematic verification process. Nearly 700 street-level observations, called "drive-bys," were completed by the end of FY99 on facilities with no EPA or state environmental record. The facility lists generated are being used to track this sector's compliance monitoring, assistance and enforcement status. Once facilities were confirmed as a chemical facility, EPA implemented activities to help the facilities improve compliance. Follow-up activities included single and multimedia inspections, compliance assistance, and enforcement.

  This project resulted in development of a unique facility identification methodology that could be applied to other industries. To capture and describe the various components of the facility identification methodology, EPA drafted a booklet for release in FY2000. This booklet describes the innovative techniques used to develop the methodology, the methodology's unique features, and its potential uses.
- **Root Cause Analysis Pilot Project:** EPA and the Chemical Manufacturers Association (CMA) completed the publication, *Root Cause Analysis Report: Industry Perspective*, to identify and evaluate the underlying causes of noncompliance with regulations. The project also evaluated individual recommendations for improving compliance, and the effect of environmental management systems on compliance. The report presents an overview of

Pollutant Profile

Several types of pollution result from the manufacture of coke, iron, and steel, the formation of metals into basic shapes, and the cleaning and scaling of metals. The coke-making and iron-making processes at integrated mills generate air emissions and volumes of quench water. The pollution produced during the steelmaking process varies depending on the process the steel mill uses. The basic oxygen furnace used by integrated mills generates control dust and sludge, a metal bearing waste. The electric arc furnace generates dust and sludge containing several heavy metals (e.g., lead and cadmium) along with slag, and gaseous and particulate matter. The forming, cleaning, and descaling processes produce wastewater sludge that may contain cadmium, chromium, and lead, oil and grease, spent liquor and wastewater containing metals (e.g., zinc, lead, cadmium, or chromium).

survey responses from 27 CMA facilities (which received 49 civil enforcement actions) about the root and contributing causes of the noncompliance that were identified in their federal civil judicial or administrative actions.

Iron and Steel Sector

Sector Profile

Of the 116 iron and steel mills operating in the United States, 25 are integrated mills and 91 are mini-mills. Eighty-five percent of the mills are located in Regions 3, 4, 5, and 6. Integrated steel mills, which are generally older than mini-mills, are large facilities that make steel from raw materials such as iron ore, scrap, limestone and coke. A fully-integrated steel mill consists of coke ovens, blast furnaces, and rolling and finishing mills. Historically, integrated mills were located based on their proximity to water (tremendous amounts of water are used in cooling and processing) and near the sources of raw materials, such as iron ore and coal. Alternatively, mini-mills use electric arc furnaces to melt scrap metal in order to make steel products. Because scrap metal is the primary raw material instead of molten iron, there are no coke-making or iron-making operations. Mini-mills are relatively new facilities, built during the last 20 years, and are located in areas where electricity and scrap metal are available at a reasonable cost. Mini-mills have narrow product lines and typically produce much less product per facility (less than 1 million tons of steel per year) than an integrated mill.

Key Activities and Accomplishments

Sector Analysis: In FY99, EPA completed a report called the *Summary of Environmental Compliance and Enforcement Data for Steel Mills*, which reviewed compliance and enforcement data for 34 integrated and mini-mills, as well as compliance and enforcement efforts carried out by EPA and state and local pollution control agency staff between 1990 and 1995. The data used for the report were extracted from existing federal, state and local compliance and enforcement files. This report is useful for stakeholders in understanding the industry and its associated processes, delineating problem areas and potentially, crafting innovative approaches to address recurrent problems.

Inspections and Enforcement: The average number of inspections per facility varies per media, however, on an average, mini-mills are inspected less frequently than integrated mills. Over the past three years, the air program inspected a higher percentage of mills (68% inspection rate for mini-mills and 73% for integrated mills) when compared to the water (50% for mini-mills and up to 77% for integrated mills) and RCRA programs (<50% inspection rate for both mini-mills and integrated mills).

EPA settled a total of 39 cases with steel mills between FY98 and FY99. Of those settled, 14 cases involved mini-mills and 25 involved integrated mills. These cases were distributed among the media programs: 11 were air-related; 9 were water-related; 9 were RCRA-related; 8 were Toxic Substances Control Act (TSCA)-related; and 2 were related to EPCRA and CERCLA. Fourteen of the settlements included injuctive relief with a total monetary value of $47,848,200. Of the 39 settled cases, 23 involved penalties, for a total value of $5,521,367.

Over the past two years, EPA also had a total of nine civil referrals to DOJ involving five integrated mills and four mini-mills. Administrative penalty orders totaled 18, nine each for mini-mills and integrated mills. The referrals and orders were also associated with different media. For referrals, CAA was most frequently cited, followed by RCRA; for orders, TSCA was most cited, followed by CAA and RCRA.

Over the past three years, the highest percentage of new SNCs for the sector was documented for mini-mills (56%). In FY99, 20 new SNCs were identified for mini-mills and eight for integrated facilities. Over the past three years, the SNC rate for mini-mills consistently increased, especially within the RCRA program, while the inspection rate decreased slightly. Over the past three years, the SNC rate for integrated mills has varied significantly. These patterns may be due to recurring problems at these mills, more focused inspections on specific problems, and/or increased scrutiny by the Agency.

Strategic Approach: In FY99, EPA initiated the implementation of the Iron and Steel Sector Strategy, which was developed jointly between Headquarters and the regions. The primary goal of the strategy is to reduce actual and potential emissions at both integrated and mini-mills by improving the overall sector compliance rates, reducing the occurrence of "media shifting," and remediating environmental harm. The strategy proposes a multitrack approach for addressing environmental and compliance management problems at integrated mills and mini-mills, and achieving the strategy goals.

Petroleum Refining Sector

Sector Profile

Petroleum refining is one of the leading manufacturing industries in the U.S. in terms of commercial transactions. Fuel products account for over 87% of the refining sector's output. Refineries also produce chemical feedstocks and finished nonfuel products (solvents, waxes, asphalt etc.). Refinery input is primarily crude oil. Currently, 158 refineries (150 with crude oil refining capacity) are operating across nine of the ten EPA regions, down from over 300 in the early 1980s. Facilities are concentrated along the Gulf Coast and near heavily industrialized areas of the east and west coasts. Sixty-five refineries are within three miles of population centers containing over 25,000 people and 37 are within three miles of centers containing 50,000 or more people.

Compliance Status: Refineries are routinely and regularly inspected, and many of the inspected facilities have had multiple enforcement actions taken against them. Roughly 82% of the refineries are inspected on an annual basis for air, roughly 52% for water, and 36% for RCRA. Over the last three years, the number of new SNCs increased for air while remaining approximately the same for water and RCRA.

For the 168 facilities tracked in the Sector Facility Indexing Project (SFIP), the number of inspected facilities in Significant Noncompliance (SNC) and the corresponding SNC rate for these facilities are shown by media in exhibit A-3.

Exhibit A-3. Number of Inspected Petroleum Refining Facilities* in Significant Noncompliance (SNC Rate)

	1997	1998	1999
CAA	77 (53%)	81 (60%)	74 (54%)
CWA	26 (24%)	28 (26%)	24 (22%)
RCRA	26 (39%)	18 (32%)	19 (32%)

* Based on 168 facilities tracked in the Sector Facility Indexing Project

Key Activities and Accomplishments

Inspections and Enforcement: The refining sector has been a priority sector for the national compliance and enforcement program since 1996. In FY99, there were 623 inspections at petroleum refineries, 8 referrals, 2 administrative penalty orders, and penalties assessed in the amount of $10.7 million.

Significant Cases:

- Multimedia action against Marathon Ashland Petroleum, LLC at their Catlettsburg, KY; Canton, OH; and St. Paul, MN facilities; including a $5.8 million penalty, $12 million to correct the violations, and $14 million to perform SEPs. In part, the action will reduce air emissions of sulfur dioxide and volatile organic compounds (VOCs) and hydrocarbon leaks into groundwater.
- Multimedia action against Shell Oil Company at their Wood River, IL facility, including a $1.5 million penalty, approximately $6.3 million to correct the violations, and over $2.8 million to perform SEPs. In part, the action will reduce air emissions of sulfur dioxide by 7,700 tons per year (tpy), nitrogen oxide by 940 tpy, and particulate matter by 260 tpy.
- Consent decree between EPA and BP Oil Company resolving violations at its Toledo, OH facility. The settlement includes a penalty of over $1.2 million. In addition, under the agreement, the company must report flaring incidents to EPA and take corrective action to reduce the likelihood of recurrence of such incidents.

Strategic Approach: A sector strategy was developed in FY98 that focuses our efforts on specific problems at refineries. The overall goals of the sector strategy are to: (1) reduce emissions from refineries; (2) bring refineries into long-term compliance (with the issues investigated); and (3) ensure more consistent interpretations and enforcement of regulations.

As part of a more strategic approach, EPA is concentrating on air pollution problems and new RCRA requirements, but continues to shift away from inspections towards more targeted, in-depth investigations. As a result of concluding some of the initial investigations, the number of referrals in FY99 increased. Current indications are that the number of referrals and the environmental significance of those referrals will continue to increase in 2000 as a result of the investigations initiated in FY98 and FY99.

EPA has attempted to make the compliance issues widely known to the refining sector so that they have an opportunity to take advantage of EPA's self-audit policy and correct any problems on their own. EPA has given presentations on the key compliance problems to industry at meetings (including meetings hosted by industry for industry). EPA has also issued Enforcement Alerts for NSR/PSD issues in general, and leak detection and repair and RCRA issues specifically at petroleum refineries. The following are key compliance problems in this sector:

- **New Source Review/Prevention of Significant Deterioration (NSR/PSD) Compliance and Permitting:** Although the average refinery size has increased, relatively few have applied for and obtained pre-construction and operating permits for physical expansions under the NSR/PSD program. Investigations are focusing on noncompliance with the permitting process, particularly for fluidized catalytic cracking units, the single largest air emission source at petroleum refineries.
- **Leak Detection and Repair:** Leak detection and repair requirements under various air regulations require facilities to identify equipment and components subject to monitoring, ensure that open-ended lines are capped, monitor the equipment for leaks, and then repair the leaks. However, monitoring by EPA typically identifies leak rates that are 2 to 10 times higher than rates identified by the company.
- **Refinery Fuel Gas Combustion Devices:** These devices represent a significant source of refinery emissions of sulfur dioxide. Controls under New Source Performance Standards (NSPS) Subpart J may be bypassed during non-emergency conditions, resulting in greatly increased emissions; modifications may have occurred, resulting in additional, newly affected facilities being subject to this subpart and its control requirements.
- **Benzene Waste:** Enforcement experience has found widespread refinery noncompliance and erroneous calculations of total annual benzene in waste streams, resulting in uncontrolled and unaccounted for benzene emissions. EPA has distributed a compliance guidance to refiners, and continues to conduct detailed investigations, including sampling, to determine refinery compliance.

- **Slotted Guide Poles:** Significant emissions reductions could be gained through installation of controls that reduce or eliminate vapors emitted to the atmosphere from the use of slotted guide poles in storage tanks.

Primary Nonferrous Metals Sector

Pollutant Profile

Air and water are impacted the most by these processes. Air pollutants include sulphur dioxide, flouride, and particulate matter containing lead, copper, zinc, arsenic, mercury, and cadmium. Water pollution results primarily from wastewater containing sulfuric acid and caustic waste. Other wastes requiring treatment, storage and/or disposal include spent aluminum potliners, waste slurry/sludge, slags and tailings, which are regulated by RCRA as hazardous waste.

Sector Profile

Most of the smelters and refineries in this sector are owned by fewer than 20 large companies and operate in every region except the upper northeast states. Of the 51 facilities in this sector, there are 23 aluminum, 21 copper, 3 lead, and 4 zinc facilities. The highest concentration of facilities is found in Regions 6, 9 and 10, accounting for over half of the facilities with 8, 12, and 9 facilities respectively.

Categorization as a "primary" nonferrous facility refers to the source material. Primary smelting and refining produces metals directly from source material that is more than 50% ore. Secondary smelting and refining produces metals from scrap and process waste. The pollution resulting from these operations varies depending upon the metal and the type of recovery technology used. The two metal recovery technologies generally used to produce refined metals are pyrometallurgical (which uses heat) and hydrometallurgical (which uses aqueous solutions).

Compliance Status: This sector has been identified as a national priority since FY96 because of the volume of pollutants discharged, released, or spilled at the facilities and their high rate of noncompliance. Some areas of the country are unable to meet national ambient air standards because of releases from these smelters, and some smelters are individually responsible for not meeting lead and sulfur dioxide standards in their region. In addition, over 40% of the facilities reported spills totaling 193,716 pounds over the past two years. Nearly 70% of the facilities that have been inspected (i.e., 132 facilities inspected) since FY96 were in noncompliance with at least one of their permits, and approximately 30% of inspected facilities were in SNC with one or more statutes.

Key Activities and Accomplishments

Inspections and Enforcement: Over 29 million pounds of TRI chemicals, including 1.3 million pounds of carcinogens, were released from all primary nonferrous metal facilities based on 1997 TRI data with the majority coming from the lead and copper facilities. Although small in total number of facilities (21), primary copper smelters and refineries also had the highest average pollutant release per facility according to the TRI data.

Since 1997, there have been 458 inspections for compliance with either air, water or hazardous waste laws at primary nonferrous metal facilities. Most inspections monitored compliance with the CAA, followed by CWA and RCRA inspections. EPA and the states concluded a total of 11 enforcement actions against facilities during the past three fiscal years with a total of just over $8.98 million in federal penalties and $14.79 million in SEPs. Four facilities, Alcoa and Reynolds in New York, Asarco in Nebraska and Kennecott in Colorado, are part of state or federal Superfund cleanups.

In FY99, 132 federal and state inspections were conducted for compliance with CAA, CWA, and RCRA. Seventy-four percent of the facilities were inspected for compliance with the CAA, 48% for CWA and 12 % for RCRA. Of the facilities inspected in FY99, the SNC rate was 32% with the CAA, 29% of facilities defined as major in the CWA, and 17% for RCRA. The percent of facilities in SNC with the CWA decreased by 6% since 1997, but increased by 4% for the CAA and 8% for RCRA.

Enforcement actions in FY99 include the settlement of an administrative complaint at the Big River Zinc facility in Illinois for RCRA and EPCRA violations which assessed federal penalties of $25,406, another $99,500 in SEPs, and $7,365 in injunctive relief actions. An estimated two tons of cadmium and lead will be reduced in the soil as a result of this action.

Significant Cases: Recent highlights include judicial settlements with ASARCO and its wholly-owned subsidiary, Encycle, for multimedia violations at its facilities in several regions. The 1998 Phase I settlement included a penalty of $3.39 million for numerous violations of the CWA and RCRA Subtitle C. The 1999 Phase II settlement includes payment of a civil penalty of $5.5 million, completion of numerous SEPs with a total projected cost of $14.7 million, and enhancement of the Environmental Management System to be used at all ASARCO facilities nationwide. Although amounts cannot be readily calculated, significant reductions of arsenic, cadmium, copper, lead, manganese, and zinc releases to the water and soil are anticipated as a result of this settlement.

Strategic Approach: In FY99, EPA began implementing a strategy for addressing this sector with the goal of improving the sector's compliance rates and reducing its total emissions, discharges and releases. The strategy's initial approach is to ensure that all primary smelters are accurately classified; the applicable regulatory provisions for each have been clearly identified; and timely enforcement action is pursued when significant violations remain unresolved. Five specific problem areas are identified as particular concerns in addressing the overall goals of greater compliance and reduced risk:

- *Proper Identification of Facilities*. Ensure accuracy of universe identification through SIC code verification efforts and TRI analysis. The universe is being tracked in the Sector Facility Indexing Project (SFIP).
- *Potential Misapplication of the Bevill Exclusion*. The goal of this activity is to ensure that all wastes not covered under Bevill are managed appropriately.
- *Permit Insufficiencies*. Regions and states will ensure that each facility has a complete permit, accurately reflecting the source's size, regulatory requirements, and activities.
- *High SNC Rate*. The strategy identifies a goal of decreasing SNCs in this sector from 30% to 10% nationwide.
- *Use of Imminent and Substantial Endangerment Authorities* to address risk. Identified actions include documenting ecological damage and human health risks and using imminent and substantial endangerment authorities as appropriate.

EPA also conducted a study of primary and secondary nonferrous metal facilities. The study focused on identifying surface water, RCRA, and air compliance problems, the processes involved, the types of enforcement actions taken by regulators, and probable causes for noncompliance. Findings will be used to identify and address specific environmental and/or compliance problems. By the end of FY99, 16 facilities in five states had been analyzed. Additional facilities remain to be analyzed, but the study should conclude in 2000.

Pulp Mills

Pollutant Profile

Pulp mills, which use large amounts of water in the pulp production process and very large combustion devices in the chemical recovery and steam/electric power production processes, contribute significantly to air and water pollution.

Sector Profile

Currently, 244 pulp mills operate in the United States and, like most large manufacturing operations, are regulated under RCRA, CAA, and CWA. Mills are widely distributed in forested areas with the largest concentrations occurring in the southeast, northwest and northeast and north-central states.

Compliance Status: Though increased inspections are revealing mills in significant noncompliance, the case referrals to the DOJ and associated injunctive relief and penalties are resulting in thousands of tons of reductions annually in air pollution, namely, volatile organic compounds (VOCs), nitrogen oxides (ground-level ozone precursors), sulfur compounds (contribute to acid rain), and carbon monoxide and particulate matter. Beyond the emission reductions that are being made at the mills that are the subject of enforcement, EPA is fulfilling one of our strategic goals which is to establish a credible deterrent to illegal pollution and to encourage greater compliance with environmental laws.

Key Activities and Accomplishments

Inspections and Enforcement: In FY99, many EPA regional offices conducted inspections at pulp mills and took enforcement actions to address violations of federal law. As a result, we settled nine civil judicial cases and one EPCRA case, and referred 10 civil judicial cases. Much of the activity occurred under the CAA in Regions 3, 5, and 6. These regions actively worked to raise compliance with the CAA in the pulp industry through enforcement actions. Enforcement of the CAA has continued to be our focus since FY97 data revealed that 32% of the 174 pulp mills inspected that year were in significant noncompliance (SNC). SNC rates have remained high among recently inspected facilities (37%) due to the additional, significant violations that EPA's in-depth investigations are revealing. Region 3, which has been the most active in this sector, is continuing their multi-year pulp mill investigation initiative. In addition to referring three CAA cases that address violations discovered during their investigations, the region worked to resolve the five cases referred to the DOJ in FY97 and FY98.

Appendix B:

Historical Enforcement Data

Exhibit B-1: Dollar Value of FY99 EPA Enforcement Actions by Statute

	Criminal Penalties Assessed	Civil Judicial Penalties Assessed	Administrative Penalties Assessed	$ Value of Injunctive Relief	$ Value of SEPs
CAA	$2,227,024	$104,625,294	$5,092,301	$1,110,783,266	$141,995,706
CERCLA	$12,715,144	$2,852,000	$2,000	$721,955,206	$12,600
CWA	$20,385,292	$7,416,728	$5,200,575	$577,486,331	$8,620,321
EPCRA	$0	$0	$3,802,384	$528,264	$4,151,296
FIFRA	$442,775	$1,300	$1,359,055	$393,910	$211,310
RCRA	$21,482,514	$24,522,800	$7,351,627	$200,467,307	$74,803,427
SDWA	$3,170,418	$1,793,577	$353,772	$811,483,657	$5,811,950
TSCA	$16,000	$0	$2,348,165	$1,125,792	$1,191,942
Title 18/MPRSA*	$1,113,707	$0	$0	$0	$0
Totals	**$61,552,874**	**$141,211,699**	**$25,509,879**	**$3,424,223,733**	**$236,798,552**

* Criminal cases with U.S. Code - Title 18 or other Violations.
Data comes from EPA criminal and civil dockets.
Source: OECA/OC/EPTDD/TEB

Exhibit B-2: National Totals, FY96-FY99 Enforcement Activity

EPA Regional Inspections				
	FY96	FY97	FY98	FY99
CAA Stationary	2,064	2,844	2,722	2,633
CAA Mobile Source	107	104	64	39
Asbestos	635	653	806	437
NPDES Minors	499	784	1,116	965
NPDES Majors	1,046	918	1,019	949
CWA 311	2,267	1,666	1,344	1,424
CWA 404	342	529	968	1,079
EPCRA 313	571	473	584	513
EPCRA non-313	689	438	804	521
FIFRA	116	207	264	259
RCRA	1,829	2,165	2,727	2,214
UST	579	1,421	1,253	1,482
SDWA	6,568	5,490	7,983	7,329
TSCA	898	1,014	1,537	2,003
TOTAL	**18,210**	**18,706**	**23,237**	**21,847**

Source: Program databases/IDEA, manual reports. There were also 113 GLP inspections and 363 data audits by HQ (OC/AED/LDIB). The FY99 CAA Stationary includes 1,227 CFC inspections. FY98 total includes 46 other inspections.

EPA Administrative Compliance Orders Issued				
	FY96	FY97	FY98	FY99
CAA	154	209	277	298
CERCLA	197	279	233	247
CWA	504	815	849	621
EPCRA	2	7	4	0
FIFRA	10	7	18	28
RCRA	35	44	49	50
SDWA	284	453	287	269
TSCA	0	4	4	3
TOTAL	**1,186**	**1,818**	**1,721**	**1,516**

Source: Docket
In addition, there were 51 HQ CAA Mobile Source NOVs with penalties.

EPA Administrative Penalty Order Complaints				
	FY96	FY97	FY98	FY99
CAA	88	126	156	193
CERCLA	37	26	1	0
CWA	153	329	389	436
EPCRA	196	293	233	285
FIFRA	73	174	187	274
RCRA	88	139	155	197
SDWA	57	45	65	64
TSCA	178	181	214	205
TOTAL	**870**	**1,313**	**1,400**	**1,654**

Source: Docket
FY97 CERCLA cases were for section 103.

EPA Administrative Penalty Settlements				
	FY96	FY97	FY98	FY99
CAA	103	139	127	154
CERCLA	39	33	3	1
CWA	169	205	324	365
EPCRA	184	366	259	244
FIFRA	107	161	173	223
RCRA	119	154	149	134
SDWA	76	44	43	40
TSCA	207	248	167	197
TOTAL	**1,004**	**1,350**	**1,245**	**1,358**

Source: Docket
FY97 CERCLA cases were for section 103.

EPA Field Citations				
	FY96	FY97	FY98	FY99
UST	115	240	194	311

Source: Docket

New EPA Civil Referrals to DOJ				
	FY96	FY97	FY98	FY99
CAA	70	89	113	109
CERCLA	127	154	138	148
CWA	48	98	81	87
EPCRA	9	11	11	12
FIFRA	3	4	4	0
RCRA	19	49	49	39
SDWA	17	13	15	5
TSCA	2	8	0	3
TOTAL	**295**	**426**	**411**	**403**

Source: Docket

EPA Civil Judicial Settlements				
	FY96	FY97	FY98	FY99
CAA	62	45	46	48
CERCLA	121	159	148	124
CWA	60	35	33	24
EPCRA	10	3	3	1
FIFRA	5	2	4	1
RCRA	22	18	14	11
SDWA	7	9	2	6
TSCA	5	3	3	0
TOTAL	**292**	**274**	**253**	**215**

Source: Docket

Exhibit B-3: EPA Criminal Enforcement Actions, FY84-FY99

	Referral to DOJ	Defendants Charged	Months Sentenced
FY84	31	36	6
FY85	40	40	78
FY86	41	98	279
FY87	41	66	456
FY88	59	97	278
FY89	60	95	325
FY90	65	100	745
FY91	83	104	963
FY92	107	150	1,135
FY93	140	161	892
FY94	220	250	1,188
FY95	256	245	888
FY96	262	221	1,116
FY97	278	322	2,351
FY98	266	350	2,075
FY99	241	322	2,500

Source: OECA/OC/EPTDD/TEB

Exhibit B-4: EPA Civil Referrals to the Department of Justice, FY75-FY99

	CAA	CWA	CERCLA	RCRA	TSCA/FIFRA/ EPCRA	TOTALS
FY75	5	20	0	0	0	**25**
FY76	15	67	0	0	0	**82**
FY77	50	93	0	0	0	**143**
FY78	123	137	2	0	0	**262**
FY79	149	81	5	4	3	**242**
FY80	100	56	10	43	1	**210**
FY81	66	37	2	12	1	**118**
FY82	36	45	20	9	2	**112**
FY83	69	56	28	5	7	**165**
FY84	82	95	41	19	14	**251**
FY85	116	93	35	13	19	**276**
FY86	115	119	41	43	24	**342**
FY87	122	92	54	23	13	**304**
FY88	86	123	114	29	20	**372**
FY89	92	94	153	16	9	**364**
FY90	102	87	157	18	11	**375**
FY91	86	94	164	34	15	**393**
FY92	92	77	137	40	15	**361**
FY93	80	84	129	30	15	**338**
FY94	141	97	144	35	13	**430**
FY95	37	54	102	14	7	**214**
FY96	70	65	127	19	14	**295**
FY97	89	111	154	49	23	**426**
FY98	113	96	138	49	15	**411**
FY99	109	92	148	39	15	**403**

Source: OECA/OC/EPTDD/TEB
FY98 CAA and National totals include 8 HQ Mobile Source referrals.
FY99 CAA/CWA totals include one HQ Mobile Source and one CWA HQ referral.

Exhibit B-5: EPA Administrative Actions by Statute*, FY75-FY99

	CAA	CWA/ SDWA	RCRA	CERCLA	FIFRA	TSCA	EPCRA	TOTALS
FY75	0	738	0	0	1,614	0	0	**2,352**
FY76	210	915	0	0	2,488	0	0	**3,613**
FY77	297	1,128	0	0	1,219	0	0	**2,644**
FY78	129	730	0	0	762	1	0	**1,622**
FY79	404	506	0	0	253	22	0	**1,185**
FY80	86	569	0	0	176	70	0	**901**
FY81	112	562	159	0	154	120	0	**1,107**
FY82	21	329	237	0	176	101	0	**864**
FY83	41	781	436	0	296	294	0	**1,848**
FY84	141	1,644	554	137	272	376	0	**3,124**
FY85	122	1,031	327	160	236	733	0	**2,609**
FY86	143	990	235	139	338	781	0	**2,626**
FY87	191	1,214	243	135	360	1,051	0	**3,194**
FY88	224	1,345	309	224	376	607	0	**3,085**
FY89	336	2,146	453	220	443	538	0	**4,136**
FY90	249	1,780	366	270	402	531	206	**3,804**
FY91	214	2,177	364	269	300	422	179	**3,925**
FY92	354	1,977	291	245	311	355	134	**3,667**
FY93	279	2,216	282	260	233	319	219	**3,808**
FY94	435	1,841	115	264	249	333	307	**3,544**
FY95	232	1,774	92	280	160	187	244	**2,969**
FY96	242	998	238	234	83	178	198	**2,171**
FY97	391	1,642	423	305	181	185	300	**3,427**
FY98	499	1,590	398	234	205	218	237	**3,381**
FY99	542	1,390	558	247	302	208	285	**3,532**

* Includes: Administrative Compliance orders issued, Administrative Penalty order complaints, Field Citations and HQ CAA Mobile Source NOVs with penalties.

Exhibit B-6. EPA APO Complaints Since FY91 by Statute

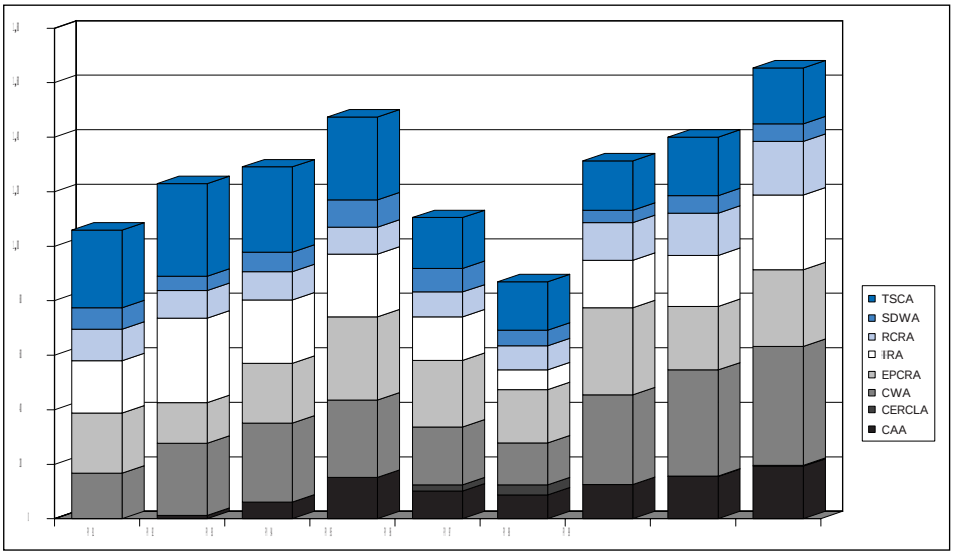


Exhibit B-7: State Environmental Agencies Formal Administrative Actions and Judicial Referrals, FY89-FY99

Administrative Actions

Statute	FY89	FY90	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99
FIFRA	6,698	4,145	3,245	3,095	4,172	3,528	2,486	2,333	1,101	1,163	1,272
SDWA/ CWA	3,100	3,298	3,180	2,748	3,960	4,063	4,231	4,598	7,051	6,960	3,602
CAA	1,139	1,312	1,687	1,411	2,005	2,050	1,833	1,534	1,919	2,410	2,036
RCRA	1,189	1,350	1,495	1,389	1,744	1,609	1,235	841	444	727	1,278
Totals	**12,126**	**10,105**	**9,607**	**8,643**	**11,881**	**11,250**	**9,785**	**9,306**	**10,515**	**11,260**	**8,188**

Judicial Referrals

Statute	FY89	FY90	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99
SDWA/ CWA	489	429	297	204	383	162	169	169	151	146	223
CAA	96	156	190	258	174	325	124	198	164	146	158
RCRA	129	64	57	112	133	91	104	66	64	60	126
Totals	**714**	**649**	**544**	**574**	**690**	**578**	**397**	**433**	**379**	**352**	**507**

Source: IDEA